JPRS 79016

18 September 1981

China Report

AGRICULTURE

No. 164

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REPORTS ON MODERNIZATION OF RURAL WORK

Increasing Food Yield

Beijing NONGCUN GONGZOU TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 7, 5 Jul 81 pp 17-18

[Article by Luo Yongquan [5012 3057 3123], assistant researcher of the Chinese Academy of Agricultural Sciences: "Strategic Significance of Developing Woody Edible Oils"]

> [Text] Editor's note: To open up the thoughts of the broad numbers of cadres and adapt to learning and using science and the new situation of hastening the development in production, this magazine has established a special column entitled "Discussions and Suggestions" to publish some of the suggestions and articles of discussion on developing our nation's agriculture written by scientists and agricultural workers. We welcome the support and enthusiastic response from comrades.

Population, food, energy and the ecological environment are the four major problems of popular concern in the present world. Agriculture is directly related to these four problems. The focus of these problems are centered around the problem of food grains.

Our nation's agricultural modernization requires the realization of the goal of an average of 1,000 jin of food grains per person. The way to increase food grains is to expand the area of cultivated land and to increase the unit area yield. At present, the area of wasteland which can be reclaimed in our nation is very limited. According to estimates, there is a total of over 200 million mu which can still be reclaimed. Large scale reclamation requires a large investment, and estimates based on our nation's present economic situation show that by the end of this century, about 100 million mu of land can be reclaimed at most, less than half the area of cultivated land which will be occupied by nonagricultural sectors during the same period. Therefore, the area of cultivated land will actually lessen. Thus, increasing the unit area yield is still the basic measure to solve our nation's ever increasing population and maintaining a definite level of food grains. But, increasing the unit area yield is limited by many conditions and high yields have definite limits.

Our nation now has 3 to 4 billion mu of grasslands and developing livestock production in a big way is fundamentally an important way to solve the problem of food. But the natural condition of most of our nation's grasslands is poor and the productivity of livestock products is low. At present, over 90 percent of our nation's livestock products come from old farming regions. Thus, although the grasslands should be rebuilt and utilized in a big way to increase as much as possible their productivity, but for the short run, we must not be overly hopeful.

The 1.8 to 1.9 billion mu of deserts, gobis and the 4 to 5 billion mu of the Qinghai-Xizang Plateau and other high and cold mountain regions are limited by natural conditions and are even more difficult for large-area rebuilding and utilization within a short period.

Estimates according to the various above situations show that by the end of this century, the per capita average yield of food grains in our nation will reach about 800 jin at most, and there will be more problems in war and during natural disasters. Fundamentally to solve our nation's problems of food grains, new ways must be opened up and new strategies must be used.

The old farming region of the great southwest, east of the line from the southern tip of Daxinganling to the eastern part of our country's Qinghai-Xizang Plateau has a total area of about 7 billion mu. This region has rich natural resources of light, heat, water and soil. Species of life forms are plentiful and many types of crops can be developed. At present, 1/3 of this region (2.3 to 2.4 billion mu) is ordinary farmland and nonagricultural land in cities and villages, the remaining is basically hilly mountain regions and water surfaces. Most of the forest vegetation in this hilly mountainland, especially the Guannei Region, has been destroyed, the natural resources of water, sunshine and heat which falls upon these surfaces are mostly wasted and they even cause frequent disasters. This is a pitiful and irrational situation.

Our nation has 1 billion people including 800 million farmers. If food grains are not increased, the consumption of the population will be a heavy burden, which could even become a factor affecting political stability and unity. If the enthusiasm of the population can be fully mobilized, the people can become a manpower resource unique in the world. About 95 percent of this manpower is distributed in the old farming regions of the great southeast. The major shortcomings of these hilly mountain regions are the relative infertile quality of the soil and soil conditions, and poor water conservancy conditions; these are the shortcomings. If woody edible oil crops that are relatively tolerant to infertility and aridity (such as chestnut, walnut, persimmon, jujube, oil tea camellia, coconut, tung oil tree, olive...etc) and if mulberry, bamboo, fruits, herbs and miscellaneous grains and such special economic crops can be planted by suiting measures to local circumstances, and interplanted with grazing grass, tea, legume and miscellaneous food grains; and at the same time developing herbivorous animals like cattle, sheep, rabbits, geese and fish in a big way; and implementing diversification in a three dimensional agriculture, then the superiority of our nation's present manpower, material strength and natural resources can be fully developed to utilize advantages, to supplement shortcomings and to hasten the development of the five sectors of agriculture, forestry, livestock production, sideline production and fishery and gradually change the internal structure of agriculture and the composition of foodstuffs; converting the singular agricultural economy into a diversified comprehensive agricultural economy. At the same time, greening of unclaimed mountains can be carried out to realize forestation of the land, strengthen retention of water and soil, revive and create a superior ecological environment, and change the vicious cycle to a beneficial cycle. Woody edible oil plants and grazing grass are perennials, after planting once, they can be continually harvested for several decades and even several hundred years. Thus, they conserve more labor force, fertilizers, and water than agricultural crops, they help solve the problems of agricultural energy and timber, and are more beneficial in strategically preparing against disasters. Therefore this is an effective measure that brings many benefits, requires little investment, produces a large gain, and changes passive factors into active factors. It is an important strategic direction in developing our nation's agriculture.

According to estimates, there are 2 billion mu of hilly mountain regions and land in small flats around houses and by the roadsides for planting special crops of woody edible oil plants and fruits, bamboo, herbs and miscellaneous grains. During the initial 20 to 30 years, 1.2 to 1.3 billion mu can be developed and utilized, and this will increase the per capita area of photosynthesis in our nation by onefold. The total yield of food grains for the whole nation can be increased 1/4 to 1/2 on the foundations of traditional agriculture, and the goal of 1,000 jin of food grains per person can even be surpassed.

Taking chestnuts and walnuts as examples, their adaptability is strong, and they can be planted in most regions of our nation. Their fruits are rich in nutrition and they can replace ordinary food grain oils and they are also welcomed on the international market. Superior varieties, resulting from grafting, can grow into trees in 10 years under good management. Each tree can produce 20 to 30 jin of fruits. Twenty-year-old trees can produce 50 to 60 jin of fruits. High yielding trees can produce 100 to 200 jin. If each person in the farm village plants one woody oil-bearing tree with care (2 to 3 trees in mountain land) and interplants grazing grass to develop livestock production, then within 10 years, efforts can be made to realize an average of 10 (20 to 30 in mountain land) woody food trees and two oil-bearing trees per person, than after 20 to 30 years, each person can enjoy 400 to 500 jin of foods from woody plants and 20 to 30 jin of woody vegetable oil, with the addition of 50 to 100 jin of dairy products and 10 to 20 jin of meat products and the food grains harvested from ordinary cultivated land, the level of a thousand jin of food per person can be surpassed. The nutrition of the people can be visibly improved. At the same time, planned parenthood must be strictly implemented and the problems of food for our citizens can be fundamentally solved.

Solving Salary Problems

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 7, 5 Jul 81 p 25

[Article by the Chinese Communist Committee of Tengfeng County, Henan Province: "Reduce the Number of Managerial Workers To Lighten the Burden of Farmers"]

[Excerpt] After the responsibility system was popularly implemented in farm villages, some new problems emerged concerning the salaries of cadres and brigade personnel.

There are four outstanding problems: First, the salary of cadres still follows the past method of "subsidies for fixed work" or "actual record of actual absence." This method is not directly related to the quality of work, the practice of "regardless of working or not, everyone eats from the big pot" and "regardless of increased yields or not, everyone gets money for food grains" still persists. Second, after implementing the responsibility system, the number of agricultural workers has dropped drastically, but relatively managerial workers (i.e., supplementary workers and marketing representatives of brigades and teams, civilian teachers, brigade operated industrial and sideline workers, health workers, broadcasters who are workers at miscellaneous jobs) have increased in number. In 1980 according to surveys of the four brigades of Ludong, Gezigou, Gujiahe, Zhangcun, managerial workers constituted 26.6 percent of the total number of workers. The commune members said discontentedly: "Harvesting a walnut but getting a jujube, the life of the commune member can never make one wealthy." Third, the cadres and the commune members alike are each assigned a plot to be responsible for the cadres,draw money for food grains according to the old way and there is a tremendous discrepancy between the income of the cadres and that of the commune members, the masses have complained a lot. Fourth, the broad masses urgently require a skillful management agency to change the past situation of an overly large agency and superficial business attitude.

Therefore, rationally solving the salaries of the cadres and the subordinate personnel of the brigades, reducing the number of managerial workers, lightening the burdens of the commune members have become outstanding problems in stabilizing and perfecting the production responsibility system.

Brigade Money Management

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 7, 5 Jul 81 p 31

[Article by Li Shihui [2621 1102 6540]: "The Method of Brigades Managing the Accounts and Money of Production Teams Is Good"]

[Text] Ruian County in Zhejiang Province has popularized the method of the brigade managing the accounts and money for production teams and this method has been welcomed by all.

The Origin of the Brigade Managing Accounts and Money for Production Teams

Beginning in 1961 when the commune system was implemented in the farm villages, the brigades established a general accountant and a general cashier to manage the accounts and money of production teams. At that time, the accounting unit increased suddenly from 868 to 8,376 and there was a shortage of accounting personnel. Some brigades employed elementary school teachers and store personnel as "fill-in" personnel. Because these people were not skilled in the accounting operation and because they had their own jobs, many "confused accounts" emerged. Thus, the system was changed so that the brigade accountants established separate accounts for the production teams and managed the accounts for the production teams. Some production teams that were relatively close to brigades felt that it was not convenient to manage accounts and money at two places, and thus sent their cash to the general cashier of the brigade for management. Therefore, the method of "managing two things" emerged. After a period of practice, this method gradually became popular throughout the entire county.

The Method of Brigade Managing Accounts and Money for the Production Teams

Brigades that manage accounts and money for production teams must possess the following conditions: 1. The general accountant and the general cashier of the brigade must have a definite job standard and capability, they must be fair so that the commune members can trust them. 2. In implementing "managing two things," the brigade must have the economic foundation of a definite income from the brigade enterprise, the cadres of the brigade must not be selfish, they must conscientiously be responsible for managing the accounts and the money of the production teams well.

When the brigade manages the accounts and nomey for the production teams, it must respect fully the autonomy of the production teams, cash expenditures and distribution must be decided by democratic discussion among the commune members of the production teams and the decisions are handed over to the general accountant and the general cashier of the brigade for execution. The general accountant and the general cashier have the right to advise against or stop any violation of policy or destruction of the system. The accountant and the cashier serve supervisory duties to help the production teams manage their finances well. In the method of management for the production teams, there are two forms of management based on realizing benefits for production, for management, and for the convenience of commune members: One method is "to bring up," this means the accounts and cash of the production teams are kept in the financial office of the brigade at a central locality. The production team assigns a specific person (usually the financial director) to be responsible for financial income and expenditure and to deal with the accountant and the cashier. Chemical fertilizers and farm chemicals rationed by the state are accounted for by the supply and marketing cooperatives on a noncash basis. When the production team needs to buy things on the market, it can go to the general cashier of the brigade any time to withdraw cash. After the purchases have been made, the withdrawal is written off and entered and handed over to the accountant for recording. According to typical surveys, general noncash accounting constitutes about 70 percent of the expenditures and cash constitutes about 30 percent. Commune members borrowing less than 5 yuan are approved by the general accountant of the brigade. Borrowing over 5 yuan requires democratic discussion by the commune members before the general cashier can make the loan. To be convenient for the commune members and to benefit production, the general accountant and the general cashier hold regular office hours during morning, afternoon and evening shifts. Each team that comes is served promptly. At the end of each month, the accounts are made public to the commune members of the production teams. The second method is "to walk down." For a production team that lives over a scattered area and that takes care of its accounts but not its cash, the general accountant can go periodically to the production team to record the accounts, report the accounts, balance the accounts, publicize the accounts and implement the "three on site procedures" to balance the accounts on site.

Salaries of the general accountant and the general cashier should be determined according to their ability and the number of production teams they serve. The salaries of the general accountant are of two kinds: One is a complete contract, the salary is set at the average wage for equivalent jobs and paid by every production team in equal shares. The second is a complete contract with subsidies. The general accountant of Jiansheng Brigade contracts a total of 2,300 work points a year and each accounting worker participates in labor for 100 work points, each month he is subsidized 15 yuan. The general cashier receives the same.

The Benefits of Brigades Managing the Accounts and Cash for Production Teams

1. Brigades managing the accounts and cash for the production teams have solved the difficulty of a shortage in financial and accounting personnel. Ruian County has 10,380 brigades and production teams and also over 2,300 commune and brigade enterprises, all require independent accounting. If each accounting unit is assigned an accountant, the entire county would need a total of 12,680 accountants, but the county only has 5,000 accountants, which is 40 percent of the required number. Through management by the brigade for the production teams, over 900 brigade accountants manage the accounts of 6,227 production teams and 1,500 brigade-operated enterprises, each accountant takes care of the accounts of 9 units, basically solving the problem of the accountant shortage.

2. This method is beneficial for strengthening financial management. The accountants of production teams are subsidized for absence from work for only 20 to 30 workdays. They must participate in competition to earn work points through labor. Therefore, they can only do their accounting work during rainy days or at night, sometimes, an account is produced only every month or each quarter, it is difficult for them to do "daily closings and monthly closings." A lot of mistakes are made, many items are forgotten or missed and the accounts are often confused. The brigade managing the accounts of the production teams can perform "daily closings and monthly closings" and the accounting will not include the five invalid entries: unaccounted slips, lack of authorization, lack of signature of approval, unauthorized change of bills, vouchers, invoices, inconsistencies on tickets for merchandise. The general cashier can also help the production team arrange and regulate capital flow, strictly control irrational expenditure, assure the realization of distribution at year end. In the past, some teams had confused accounts and were seriously in debt, after the brigade managed the accounts and cash for them, the production teams have not had any more extra expenditures for 10 years.

3. This method is beneficial for stabilizing and improving accounting personnel. After the implementetion of brigades to manage the accounts and cash for production teams, there was more accounting work, forcing accounting personnel to study their tasks and improve their efficiency. At the same time, when the brigade managed the accounts and cash for the production teams, changing the accounting department or system will affect several units and this must be approved by everyone. This is very beneficial in stabilizing the accounting teams.

4. This method has reduced the burden of the farmers. The entire county has 5,000 accountants, their total salary in work points is 600,000 workdays, each family supports 3 work points. If each accounting unit is assigned an accountant, each family will have to support 5.6 work points. Therefore, brigades managing the accounts and cash for production teams have reduced the burden of the farmers and can also assure that the party's policies and guidelines are thoroughly implemented.

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'JINGJI YANJIU' ON GRAIN, DIVERSIFIED ECONOMY

HK040727 Beijing JINGJI YANJIU No 7, 20 Jul 81 pp 40-45

[Article by Yan Ruizhen [0917 3843 3791] of the Agricultural Economic Department of the Chinese People's University: "A Tentative Discussion on the Interrelation Between Grain Production and the Diversified Economy"]

[Text] Objective laws which are independent of human will govern the relationship between the grain production sectors and sectors of the diversified economy. Only by grasping these laws can we clearly understand the economic roots of the present irrational structure of our agricultural production, formulate a rational structure of agricultural production which is suited to the concrete economic conditions in our country and create the conditions for the early realization of this structure. This task has great significance for overcoming blindness, strengthening consciousness, preventing arbitrary directives and correctly implementing our present efforts to readjust the structure of agricultural production.

I

Two objective laws govern the interrelation of agricultural production sectors: First, the coexistence of the specialization of agricultural production and the all-round development of diversified economic sectors. Second, the level of development of the grain production sectors determines the scale and rate of development of the diversified economic sectors to a great extent.

Like other material production sectors, with the growing progress of social productive forces, agricultural production, as it reaches a certain stage, takes the road of social division of labor and specialization of production and consequently, specialized cultivation areas appear in agricultural production. The emergence of specialized agriculture is a great progress in agricultural production. It is beneficial for realizing geographical division of labor in agricultural production and for bringing regional strong points into play; it is beneficial for the workers to grasp the laws of agricultural production, accumulate production experience and improve labor technique; it is beneficial for speeding up the realization of agricultural mechanization with limited investment; it is beneficial for increasing the per unit area yield of agricultural products and rate of commodity production. However, agricultural production is also different from other material production sectors. That is, the specialization of its production exists side by side with the all-round development of the diversified economic sectors.

The reason why agricultural production must realize the all-round development of the diversified economic sectors is first determined by the diversity of the people's need for agricultural products. People do not only ask for grain but also for meat, oil, vegetables, sugar, cotton, hemp, tobacco, tea and others. All these products have the common characteristic of being bulky, perishable, hard to store and difficult to transport. It is better that they be produced in places where they are consumed. Our present rural economy is different from that of the highly developed capitalist countries. Our per capita production of agricultural products is still low and the agricultural population constitutes a significant majority of our population (84 percent of the total population). Thus, agricultural products turned out every year are mostly for the countryside's own consumption and the rate of commodity production is low. At the same time, communications and transportation are not very well developed. This problem is particularly acute in the hilly regions which constitute about two-thirds of our territory. Under such conditions, if we do not realize all-round development of the diversified economic sectors and engage in a single specialized cultivation, t will bring serious difficulties to the people's livelihood.

The reason why diversified production must be adopted in agriculture is also determined by the peculiarities of agricultural production itself. First, land is the most basic and irreplaceable means of production in agriculture. Every country, area or enterprise normally possesses land of varying soil constitution and which is put to various uses. Without engaging in diversified production, regional strong points cannot be brought into play and land cannot be fully and rationally utilized. Second, agricultural production is distinctly seasonal. There is great risk of missing the farming season during the busy period and during the idle period, manpower and the means of production might not be properly utilized. However, different production sectors have different busy and idle periods in a year. Therefore, by proper coordination of the work of production sectors with complementary schedules, one will be able to make full use of both human talent and material resources. Third, various agricultural production sectors are interdependent. For example, crop-raising provides animal husbandry with fodder while animaly husbandry provides crop-raising with fertilizer and draught animals and fully makes use of the by-products of crop-raising. Forestry not only provides animal husbandry with fodder but can also remold weather, regulate rainfall, conserve soil, conserve water, give protection from wind and prevent soil erosion. It plays a significant role in protecting grazing land, grassland and agricultural land and developing irrigation. The development of fishery, in turn, creates conditions for using soil from ponds to fertilize fields and trees. It is beneficial for both agriculture and forestry. Industry operated by communes and brigades turns primary products provided by agriculture, forestry, animal husbandry and fishery into products that people can directly consume. By-products of such processing are also used in local agricultural production. Fourth, various sectors of agricultural production require various lengths of time to complete a production cycle. By diversified production, sectors with short cycles can be used to support those with long ones and income and expenditure in different months of the year can be balanced. Thus, capital turnover is accelerated and agricultural reproduction can be expanded.

Concluding from the above discussion, all-round development of diversified economic sectors in agriculture has the following advantages: First, it maintains and regulates the internal proportional relationships in agricultural production, smoothens the transformation process of energy and material, maintains agricultural econological balance and continuously improves the environment and conditions for agricultural production. Second, all important elements of agricultural production, including land, natural resources, manpower, means of production and by-products are fully and rationally utilized. Unit production cost is low; agricultural labor productivity is high and economic results are good. Thus, it is able to improve commune members' livelihood and enliven the whole rural economy while continuously increasing the accumulation of the collective economy. The all-round development of diversified economic sectors in agriculture not only creates very favorable natural conditions for reproduction among the various sectors, but also creates very favorable economic conditions for agricultural reproduction to be perpetuated in a healthy cycle. We must take diversified production and all-round development as strategic measures to make our rural economy prosper.

Some people think that specialization in agricultural production and all-round development of the diversified economy are mutually exclusive and dobut whether they can coexist. This is, in fact, a misunderstanding. The coexistence of specialization in agricultural production and overall development of the diversified economy has the following meanings: First, realizing the all-round development of a diversified economy on a national scale by specialization in production, with various regions and production units engaging in their own specialized production; second, within a region or production unit, the combination of specialization and diversified economy through the rational coordination of the leading sectors and the supplementary sectors. This means that the leading sectors embody the orientation of specialization, while the diversified supplementary sectors embody the overall development of a diversified economy. The two are mutually opposed yet mutually united. Thus, this assimilates the strong points of both, while avoiding the problems that arise when the two are developed in isolation.

However, the all-round development of a diversified economy does not mean that all agricultural production sectors are equal in importance. Among all the agricultural sectors, grain has a particularly important place. It is the basis of agricultural development. Stalin once called grain the "foundation of the foundation." This is because: First, agriculture is the production sector which provides the people with the means of livelihood. Among the products supplied by agriculture, such as grain, cotton, oil, meat, leather, fruit and vegetables, grain is the most basic means of livelihood. It is only after people have satisfied their need for grain and only when they have suplus land, manpower and means of production that they can engage in diversified economic production outside the production of grain; that there can be development of other agricultural sectors. That is to say, the scale and rate of development of the diversified economy is dependent on the level of development of grain production. This is because among all agricultural products used for food and daily consumption, grain is not only the easiest to produce and the easiest to store but also the production sector with the highest productivity. Take animal husbandry for example: When the animals process fodder into animal products, around 70 to 80 percent of the energy is lost. Based on the production level in our country, it takes 6 jin of grain to produce 1 jin of lean meat. While 6 jin of grain is enough for a person to live for 6 days, 1 jin of lean meat cannot perform such a function. Second, some production sectors, such as animal husbandry, fishery and some rural industries, directly use grain for raw material. They are even more directly dependent on the grain production sector.

Thus we can see that whether a country or area can realize diversified production or not, how large is the scale of development of various production sectors, what are the leading sectors and how production is structured are not dependent on the people's subjective will but on the level of development of grain production--that is, the scale and rate of its development--to a large extent.

II

An inherent balanced relationship exists between grain production and the diversified economy. Commensurate to a specific development level of the grain production sector, a particular scale of diversified economy comes into being. If the development level of the former is high, it is possible to allocate part of the surplus land, manpower, means of production and grain to develop the diversified economy. On the contrary, if the level of development of the grain production sectors is low and it is unable to satisfy the people's needs, the situation wherein land for grain production squeezes out forests, grassland and land for aquatic production and economic crops will emerge.

Looking at the history of agricultural development in our country the agricultural production structure before the spring and autumn period and the period of the warring states resembled that of the present agriculturally-developed European and American countries characterized by the combination of agriculture, forestry and animal husbandry, with forestry and animal husbandry also occupying positions of importance. The basic reason why our structure later changed to one of a simple grain economy was that although the total land area and the latitude of the geographical location of our country is basically similar to Europe and America, arable land in those countries constitutes more than half of the territory while it is only one-tenth of the land area in our country. Our population is also far larger than that of Europe and America. With the continuous increase in population, grain became more and more insufficient. The main effort had to be devoted to grain production. Under the conditions of a low level of grain cultivation at that time, the easiest way to increase grain production was to increase the cultivated area. The usual rule was: first, forests were destroyed to open up new land. Forestry was gradually damaged. Then, the grasslands were indiscrimately cultivated. Grain stalks were also largely used as fertilizer and fuel. Thus, animal husbandry was also damaged. The entire agricultural economy was transformed into simple grain production.

Thus we can see that during certain periods, grain production sectors can promote the overall development of the diversified economy while during others, it can obstruct or even squeeze out the diversified economy. Whether it plays the role of promoting or squeezing out the diversified economy depends on whether per capita grain disttibution in real terms is higher or lower than the minimum required per capita grain distribution.

The minimum per capita grain requirement means the minimum amount of grain consumption a normal person needs for his subsistence in 1 year plus the seeds needed to ensure the reproduction of this amount of grain. When the per capita grain distribution in real terms suprasses the minimum per capita grain requirement, the grain production sectors will have extra capacity to promote the overall development of the diversified economy. During such a period, the natural and economic conditions for agricultural reproduction are placed in a healthy cycle. On the other hand, when per capita grain distribution in real terms is lower than the minimum per capita grain requirement, the grain production sectors will squeeze out the diversified economy and the natural and economic conditions for agricultural reproduction will deteriorate.

The minimum per capita grain requirement in various regions differs according to the species of grain cultivated and crop period. Based on present conditions in our country, the average figure should be somewhere between 500 to 550 jin of unprocessed grain. For a long time, per capita grain distribution in real terms in our country had been around 600 jin of unprocessed grain, quite close to the minimum per capita grain requirement. The balance between the two was a very fragile one. The interference and sabotage of Lin Biao and the "gang of four's" extreme "leftist" line and our own shortcomings and errors in our work made growth of grain production very slow while the national population has been increasing and per capita grain distribution in the rural areas has dropped. The result was: The balance between the grain production sectors and the diversified economy which was established during the 1950's was not maintained. As economic laws took their natural course and ruthlessly showed their effect, grain production squeezed out the diversified economy in many places. The "gang of four's" indiscriminate criticisms, struggles, destructions and crusades further aggravated this process.

For quite some time, people have been talking about the problem of the destruction of ecological balance. The immediate cause of the destruction of ecological balance lies in the irrational structure of agricultural production while the economic roots of the irrational structure of agricultural production lies in the imbalance between per capita grain distribution in real terms and the minimum per capita grain requirement. Thus we can see that to maintain ecological balance depends on maintaining the balance between per capita grain distribution and the minimum per capita grain requirement. Balance of the latter is a guarantee for maintaining the balance of the former. Without the latter balance and talking about ecological balance in isolation, preventing the destruction of the ecological balance will only be empty words.

Maintaining the balance between per capita grain distribution and the minimum per capita grain requirement is an extremely important question both in agricultural economic theory and in the practice of leading agricultural production. A very important task in agricultural production leadership is to fully take advantage of the socialist system's strong point of planned production and consciously realize this balance through constant readjustment.

To more clearly explain this point, we can use data gathered from Xishuangbanna as illustration. In terms of agricultural production, Xishuangbanna is divided into two areas: flatland and hilly land. During the early part of the 1950's, flatland was mainly devoted to grain production. Grain output was above the subsistence level and the surplus was supplied to the hilly region. Hilly land was mainly devoted to the development of forestry and the cultivation of economic crops, such as tea, shellac and tropical fruits. The local residents were very keen on protecting their forests. They conserved the rich tropical forests and never cut down trees unless it was necessary. Every time a baby was born, they planted 20 to 30 new "iron-knife trees" (a fast-growing tree good for firewood) for fuel.

Thus, there was all-round development in the area's diversified economy and ecological balance was maintained. Xishuangbanna then was surrounded by green mountains and rivers and was a sanctuary of rare birds and beasts. It was a very precious natural genetic reservoir of our country. After more than 20 years of development, the situation has changed. Population in this area increased by 200 percent (half from natural birth, half from immigration) while there has been no corresponding increase in the level of grain production. Consequently, per capita distribution of grain in real terms gradually went down and the original balance transformed into an imbalance. The nearby areas did not have the capacity to make up for the grain shortage in this area and even if it was possible to import grain, because of distance and poor transportation, per jin cost of grain (including transportation expenses) would reach around 1 yuan. Thus, to solve the grain problem, Xishuangbanna had to take the simple way out--increase the cultivated area of grain. Therefore, destruction of forests to open up new land and build fields for grain production in hilly regions took place on a wide scale. To aggravate the situation, their method of grain production was also very backward. It was purely slash-and-burn cultivation and large tracts of land were used for low-yield cultivation. For every year in which they burned down forests to plant, these lands were left unused for 2 subsequent years. This became a vicious circle. Furthermore, for every mu of land reclaimed on the hills which had a per mu yield of merely 100 or 200 jin, 3 mu of forest had to be destroyed. This resulted in serious soil erosion. According to statistics, the forest area in Xishuangbanna in the 1950's was 13.8 million mu. At present, it has been reduced to 2.64 million mu. Even the natural conservation areas prescribed by the state were not saved from the destruction. Many precious tropical virgin forests were lost forever.

Between the two economic indices of minimum per capita grain requirement and per capita grain distribution, the former is relatively static, while the latter is subject to constant change. Actual distribution is computed by multiplying grain cultivation area by unit production and dividing the product by the total population. Therefore, it changes with the movement of grain cultivation area, per unit production and the population. For more than 20 years, our major mistake in arranging the structure of agricultural production was, however, not in devoting too much effort to grain production, but in:

First, we did not foresee or firmly grasp the trend of change in per capita grain distribution resulting from changes in population and total grain output in the whole country or in an area during a specific period of time. We did not make plans for constant readjustment, for increasing actual per capita grain distribution by population control and increase of grain production and for keeping the balance between the two.

Second, we adopted the wrong method on the question of increasing grain output. Its manifestations were: (1) We did not take notice of regional peculiarities and uniformly applied the policy of a single-crop rural economy with grain as the principal product. The result was regional strong points were not thought into play and resources were not rationally utilized or were even destroyed. (2) To increase grain output, we took the road of vast cultivation area and low output or expanding grain cultivation area without increasing per unit output. The little increases attained in total grain output were achieved at the expense of forestry, animal husbandry, fishery and economic crop-raising. The masses called this "taking grain as the key link and eliminating all others." (3) We put grain production in opposition to the diversified economy. We saw only the decisive role of grain and did not see that all-round development of the diversified economy could also promote grain production. We did not realize that abundant products from the diversified economy could relive the pressure of the demand for grain. We naively thought that "if grain yield cannot exceed the plan, we have no time for other tasks" and single-mindedly grasped grain production. As a result, the diversified economy was eliminated and grain production also suffered without the support of the diversified economy. At present, in many high-yield areas engaged in single-crop grain production, production has remained stagnant for a long time. This is a good illustration of the above point.

III

The maintenance of balance between actual per capita grain distribution and minimum per capita grain requirement only shows that various agricultural production sectors are able to maintain their original balance. It does not necessarily mean that the agricultural production structure during this period is rational.

A rational agricultural production structure must meet the following four requirements:

First, it must be able to meet the people's nutritional need for various agricultural products. According to a scientifically formulated standard and the peculiarities of our country, every person needs at least 2,400 kilocalories of energy and around 50 grams of protein each day. Of these, one-eighth to one-seventh of the energy and one-eighth to one-seventh of the protein are supplied by food from animal products. Computed according to this standard, the minimal per capita distribution of major agricultural, animal and fishery products in a year is as follows:

(Unit: jin)

Products	Desirable Amount	Actual Amount in 1978
Fish	30	10.0
Grain	800	636.0
Oil	12	4.8
Sugar	20	7.1
Vegetables	300	--
Meat	40	15.0
Eggs	15	4.0
Milk	20	1.9
Fruits	20	13.0

Second, it must be able to maintain ecological balance and promote coordination and mutual enhancement among agriculture, forestry, animal husbandry, sideline occupation, fishery and other sectors (particularly between grain and the diversified economy). To achieve this, 30 percent of our land area must be covered by forest. This percentage must be higher in mountainous areas (40 percent) and lower in hilly areas (20 percent). On plains, the percentage must be higher than

10 percent. To maintain the production scale of the above economic crops and forestry, animal husbandry and fishery, grain production sectors must not only be able to provide the minimum per capita grain requirement of 500 to 550 jin of unprocessed grain, but must also be able to produce an extra per capita amount of 250 to 300 jin of raw material to support the production of animal husbandry and other production sectors. Thus, the level of development of grain production must ensure a per capita grain distribution of 800 jin of unprocessed grain.

Third, it must ensure the balance between the scale of various production sectors and the condition of the means of production and economic conditions to enable agricultural production to advance on the basis of continuously expanding the reproduction of natural and economic conditions.

Fourth, it must maintain a high level of collective and individual income and be able to enliven the rural economy and make the rural areas prosper. Based on computation according to the above structure of agriculture and animal husbandry, annual per capita income distribution will be around 130 yuan. It surely represents quite an increase when compared with present levels but it is still far from prosperity. There still has to be great development in commune and brigade-run industry and sideline occupations. Looking at present conditions, the development of commune and brigade-run industry is a necessary step to overcome the present difficult situation of large population and little arable land, to quickly improve the situation of the 800 million agricultural population and feed them and to swiftly make the rural economy prosper. From now on, the relative weight of commune and brigade-run industry must gradually be raised above 50 percent of total rural industrial output. We must achieve rural industrialization and effect a fundamental change in the situation of our rural areas.

Based on computation according to the above projection, the rational agricultural production structure in our country should consist of a ratio of 67:33 between crop-raising and animal husbandry. That is, crop-raising should constitute two-thirds of agriculture and animal husbandry one-third. Those proposals which blindly apply foreign statistics and contend that the production value of animal husbandry in our country should constitute more than one half of the total are impossible and unnecessary in our country at least for a considerable period of time to come. Forest land must constitute 30 percent of total land area and the production value of commune and brigades-run industry must constitute more than 50 percent of rural industrial output. The precondition for realizing this agricultural production structure is that actual per capita grain distribution reaches 800 jin.

Concluding from the above discussion, three possibilities can be foreseen in future movement and change of the agricultural production structure: First, per capita grain distribution remains below 500 to 550 jin; the agricultural production structure turns for the worse; grain production continously squeezes out the diversified economy and the 800 million rural population cannot find sufficient food. Second, per capita grain distribution increases to between 500 to 550 jin and 800 jin; the diversified economy is gradually developed; the entire agricultural production structure increasingly turns for the better but is still imperfect. Third, actual per capita grain distribution surpasses 800 jin; the agricultural production structure is rationalized; the diversified economy enjoys all-round development and the whole agricultural production realizes reproduction in a healthy cycle. Computing according to this standard and under the condition that population remains constant, we still need to increase grain production by 150 billion jin each year.

What are the prospects for grain production and supply in our country in the near future? With the readjustment of the agricultural production structure, first, some land which is unsuitable for grain production but suitable for forestry, animal husbandry, fishery and economic crop-raising will be reconverted into diversified economic production. Second, in the past few years, in order to increase grain production, we have disregarded the feasibility of economic and natural conditions in blindly raising the multiple crop index and squeezing out area for green manure crop cultivation, fallow land and leguminous plant cultivation, resulting in a drop in soil fertility, proliferation of weeds, spread of pests and destruction of the agricultural ecology. This must be rectified and the multiple crop index in grain production must be reduced. By doing thus, although the cultivation area of grain will go down, it will not only be good for developing the diversified economy, but will also be very necessary for the development of grain production itself. In 1979, part of the irrational cultivation plan in the whole country was readjusted. Some overly high multiple crop indices were reduced and the grain cultivation area was reduced by 32 million mu. However, because per unit area output was raised, the total grain yield still increased by more than 40 billion jin during that year and forestry, animal husbandry, oil-bearing crops and other industrial crops also increased production. This shows that as long as there is rational arrangement, it is possible to develop a diversified economy by cutting down the grain cultivation area, on condition that the per unit area output is continuously increased. Of course, we must also take note that if management is bad, by summary and swift reduction of grain cultivation area in some areas (particularly high-yield grain producing areas) during a given period, the already accute grain problem might be further aggravated and further damage might be done to the diversified economy of other areas.

How much we can reduce the grain cultivation area to convert it to diversified production really depends on the growth rate of total grain output. On the whole, the sum of the amount of grain production reduction due to reduction of the cultivated area and the amount of grain needed to feed the population increase in a year must be essentially equal to the amount of grain production increase in that year. This should be the ceiling for cuts in the cultivated area in any 1 year and this limit must not be exceeded. The readjustment of the agricultural production structure must not be done in a rush. It is unrealistic to hope to use a few years to totally readjust our present irrational agricultural production structure. We must be prepared to work for 10 years, 20 years or even longer to accomplish this task. We must be enthusiastic about developing a diversified economy. Apart from using all land and areas which are possible and suitable for diversified production to develop the diversified economy, we must particularly do concrete work and increase total grain output in a step-by-step manner. We can divide the task of readjusting the entire agricultural production structure into two parts: First, we must change the present situation whereby cotton, oil and grain depend on importation. According to statistics in the Nantong-Yancheng areas, if we can solve the problem of 1 billion jin of grain, from 1985 onward, we can increase cotton production by 4 million dan each year. Meaning, 2.5 jin of grain can get 1 jin of cotton, whereas grain and cotton prices in the international market stand at a ratio of 1:15. Thus we can see that the expansion of cotton fields in these areas can reap great economic benefits. Second, we must gradually realize the transformation from an irrational to a rational agricultural production structure. The first part can be completed in a relatively short time, while the last part will take longer.

At present, to make up for the serious effects caused by the extremely irrational agricultural production structure which was brought about by longstanding one-sided emphasis on grain production, we must vigorously propagandize the importance of forestry, animal husbandry, sideline occupations, fishery and industrial crops and take concrete steps to change this irrational structure. However, we must not move from one type of one-sidedness to another type and neglect grain production. Grain is an important question which bears on the whole of agriculture and the whole national economy. We must take a prudent and scientific attitude toward this question. Under the condition of balance between demand and supply of grain, we must gradually readjust the internal disequilibrium in agriculture in a planned manner. As the 30 March circular of the CCP Central Committee and the State Council said: "In undertaking this task, our orientation must be clearcut and our pace must be steady. We must take into consideration all related elements, repeatedly analyze, make use of favorable conditions and avoid unfavorable ones, make prudent decisions and advance steadily. We must never neglect grain production and must expand diversified production. This is our policy."

(Article received in January 1981 and edited in April)

CSO: 4007/568

BRIEFS

MECHANICAL SEED SELECTION--Beijing, 1 Sep (XINHUA)--China's seed companies have taken active measures to popularize machine selection of fine seeds of various crops with good results. The total amount of fine seeds selected by machines for planting reached some 1.2 billion jin last year, 10 times of that selected in 1978 and 2 times of that selected in 1979. The Ministry of Agriculture, which imported seed-selecting machines from abroad in 1976, asked farm machinery institutes and plants to design, develop and produce similar machines to meet our own needs and started popularizing these machines in 1978. At present some 5,000 seed-selecting machines are used to select seeds of wheat, rice, maize, rape, cotton and other crops in various provinces, municipalities and autonomous regions, including Liaoning, Ningxia, Jiangsu, Beijing, Shanghai, Tianjin and Heilongjiang. [Beijing XINHUA Domestic Service in Chinese 0102 GMT 1 Sep 81 OW]

CSO: 4007/572

BRIEFS

PROCUREMENT OF SUMMER GRAIN, OILSEEDS--As of 20 July, some 1.59 billion jin of summer grain were delivered to state granaries in Anhui, overfulfilling the state quota by 6 percent, or 310 million jin over that of the same period of the record year of 1979. Following the fulfillment of delivery of rapeseeds in late June, local peasants continued to sell their surplus rapeseeds to the state. By July 20, some 940 million jin had entered granaries. This amount may be converted into more than 300 million jin of oil, which is a little more than 100 million jin over and above the entire amount of oil (including rapeseed, peasant and sesame oil) procured in 1980. Convinced that the party's rural policies will remain unchanged, some peasants even sold their old grain and accumulated oil this year. A number of peasant households sold in one single season 10,000 jin of wheat and 1,000 jin of oil each. [Beijing RENMIN RIBAO in Chinese 28 Jul 8] p 1]

ANHUI PREFECTURE GRAIN PURCHASES--Suxian Prefecture, Anhui, last year purchased 680 million jin of grain, including above-quota purchases, and stored 1.1 billion jin of grain in granaries. This year, its state purchase and above-quota purchases of summer grain amounted to 290 million jin, and as of 5 August had stored 399 million jin of grain in granaries. It is expected that 1 billion jin of autumn grain and 150 million jin of oil-bearing crops will be stored this year. [OW011603 Hefei Anhui Provincial Service in Mandarin 1100 GMT 25 Aug 81]

RICE HARVEST--Shucheng County, Anhui, has reaped a good early rice harvest from more than 443,000 mu of rice fields. As of 2 September, the county had procured 40.88 million jin of rice, overfulfilling early rice procurement tasks by 2.2 percent. [OW071251 Hefei Anhui Provincial Service in Mandarin 1100 GMT 5 Sep 81]

CSO: 4007/569

BRIEFS

JIANYANG COUNTY SUMMER GRAIN--Jianyang County, Fujian, fulfilled its annual summer grain procurement plan on 22 August, 1 month ahead of time, by storing more than 76 million jin in granaries. [OW031551 Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 2 Sep 81 OW]

FUJIAN RICE BLAST--Some 37,000 mu of late rice crops in Shaowu County, Fujian, are exposed to blast of rice. Efforts are being made to control the disease. [Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 1 Sep 81 OW]

LIANCHENG COUNTY RICE--Liancheng County, Fujian, this year produced 3 million jin more early rice than in 1980. [Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 1 Sep 81 OW]

LONGXI PREFECTURE GRAIN--As of 17 August, Longxi Prefecture in Fujian Province had overfulfilled the annual summer grain procurement quota. More than 430 million jin of grain had already been delivered to the state granary. By the same date, some 39 million jin of peanuts had been procured. This was 50 percent more than the preset quota. [Fuzhou FUJIAN RIBAO in Chinese 23 Aug 81 p 1 OW]

FUJIAN TANGERINES, TEA--Yongchun County, Fujian, is growing 38,000 mu of tangerines and 42,000 mu of tea. The total output value this year can reach 7.5 million yuan. [Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 1 Sep 81 OW]

FUJIAN PREFECTURE RICE CROPS--The 2.3 million of single-crop and double-crop late rice in Sanming prefecture, Fujian, is growing well. Rice blast, which seriously affected the prefecture's early rice crop, has been basically arrested after all rice blast-afflicted straws in 600,000 mu of the early rice fields were properly disposed of. [OW011603 Fuzhou Fujian Provincial Service in Mandarin 1120 GMT 27 Aug 81]

CSO: 4007/563

GUANGDONG

BRIEFS

GRAIN, OIL PROCUREMENT--Beginning from this year, Guangdong Province institutes full responsibility systems in grain and oil purchase and sales, with quotas to be unchanged for 3 years. This is a reform in the system of grain and oil management in the province. The implementation of this system is beneficial to the stabilizing of the peasants' burdens so that the production teams, under the guidance of the state plans, can take such measures as are suitable to local conditions to readjust the arrangement of agricultural production and to promote the all-round development of grain and industrial crops. After the increase in the prices of grain and oil procurement above the quota, the peasants throughout the province can earn an additional 42 million yuan or so from grain procurement above the quota and an additional 10 million yuan or so from edible oil procurement above the quota with free supplies of 100,000 tons of chemical fertilizers by way of reward. [HK180705 Guangzhou Guangdong Provincial Service in Mandarin 2330 GMT 14 Jul 81]

SPRING TEA OUTPUT UP--Spring tea output in Guangdong this year reached 79,200 dan, a 8 percent increase over the same period of last year. Since last winter, 42,500 mu of tea plantation have been established on reclaimed land in Guangdong. [Hong Kong ZHONGGUO XINWEN in Chinese 13 Jul 81 p 10]

CSO: 4007/564

BRIEFS

GUIZHOU AUTONOMOUS PREFECTURE IMPROVEMENTS--Since liberation, particularly since Qiandongnan Miao-dong Autonomous Prefecture was established in July 1956, the autonomous prefecture has built water-drawing channels and other water conservancy projects, totaling 34,292 projects; with some 1.3098 million mu of irrigated farmland, 46.8 percent of the total area of its arable land, which accounts for 4.8 times of the amount arable land there was in the initial period of liberation. The autonomous prefecture has also actively carried out diversification. The autonomous prefecture's total grain output last year reached 1.7591 billion jin, 51.5 percent more than in 1955. The autonomous prefecture now has 22.31 million mu of forests, 48.7 percent of its total area. Over the past 31 years, the autonomous prefecture has supplied some 10.13 million cubic meters of timber to the state. It has set up 713 local factories, mines and enterprises, including coal mines, electricity plants, machinery plants, chemical works, leather factories, paper mills, foodstuff factories, textile mills, construction material plants, radio plants, and so on, which have manufactured some 60 kinds of main industrial products. Its total industrial output value last year was 116.12 million yuan, 35 times greater than in 1949. The length of its roads has increased from 5.04 km before liberation to 4,450 km now, with 3,018 motor vehicles of various kinds. It has built channels, totaling 1,275 km. [HK180720 Guiyang Guizhou Provincial Service in Mandarin 2315 GMT 19 Jul 81]

CSO: 4007/572

ZUNHUA COUNTY BENEFITS FROM AGRICULTURAL STRUCTURE REFORM

Shijizhuang HEBEI RIBAO in Chinese 23 Jul 81 p 1

[Article by correspondent: "Developing Agriculture Depends on Policy and Science; Zunhua Utilizes Achievements of Zoning To Reform the Agricultural Structure; a New Situation Has Emerged in the Development of Agricultural Production of the Entire County"]

[Text] Zunhua County, conscientiously implementing the spirit of the Third Plenum, has criticized the leftist mistakes and utilized the achievements in agricultural zoning in time, and suited measures to local circumstances to reform the agricultural structure. A good new situation of overall development has emerged in agricultural production throughout the county. A comparison of 1980 and 1979 shows that the total yield of food grains increased 14.5 percent, the total yield of cotton increased 60.7 percent, and the total yield of peanuts increased 55.4 percent. The total yield and the unit yield of chestnuts, corn and paddy rice all reached the highest levels in history. At the same time, forestry, livestock production and diversification also developed on a relatively large scale.

Zunhua County is a test county of agricultural zoning and agricultural resources survey in our province. For over 2 years, with the help of concerned departments, an overall survey of the 1,520 square kilometers of land of the entire county was conducted. The results of the survey showed that 40 percent of the land in the county is suitable for developing food grain production and economic crops, 37.6 percent is suitable for developing forestry, and over 4 percent is suitable for developing livestock production. But for a long time, because of the influence of leftist mistakes, all mountain land, hilly regions and plains had to take food grains as the key link, and regardless of the temperature, light conditions, or water resources, all had to plant more wheat. Thus forestry, livestock production, sideline production and diversification were seriously damaged. After the party Third Plenum, this county conscientiously purged the "leftist" mistakes, and on the basis of the resources survey, developed agricultural zoning and readjusted the internal structure of agriculture.

In forestry, superiority of producing chestnuts in the mountainous land in the north was firmly grasped. Now, 300,000 new chestnut trees have been planted, there are 500 mu of seedbeds, and at the same time, 7 plots of superior varieties and 15 densely planted gardens have been established and 400,000 trees of superior varieties have been grafted. Last year, a year of severe drought, the total yield of chestnuts reached 9.8 million jin, an increase of 3.8 million jin over 1979. In the southern mountain regions, hawthorn fruit was produced, and plans called for increasing the original area of more than 7,000 mu to 20,000 mu. In 1980, 1,681 mu of hawthorn plants were newly planted. At the same time, new forestation in the mountain regions covered 25,400 mu, mulberry trees covered 1,135 mu, and 590,000 dry fruit trees were planted. To develop the superiority of grassland resources, cattle and sheep and family raising of livestock in small numbers were developed in a big way, with the prerequisite that the number of hogs raised be stabilized. Up to the end of April of this year, the entire county raised 249,000 head, remaining in a stable state. The number of sheep raised was 49,800 head, an increase of 26.4 percent over 1979. During the first half of this year, 900,000 chickens were hatched. Over 1,000 families raised over 50 chickens each. The number of cattle, ducks, geese, and rabbits also increased by a large amount. In the resource survey, over 10,000 mu of water surface was found that can be used to develop fish culture. As of 1980, 7,000 mu have already been utilized, commune brigades have developed 178 locations for raising fish, and up to 50 families are raising fish. The development of diversification has also provided a source of raw materials for the big development of commune and brigade enterprises. Up to the present, there are over 4,100 commune and brigade enterprises throughout the county and the annual income is 24.1 million yuan.

In food grain production, in accordance with the new agricultural zoning plan, suiting measures to local circumstances was insisted upon, and the individual superiority of the zones was developed. The planting area of wheat was gradually readjusted from the original 490,000 mu to 340,000 mu in 1980, from double cropping a year of flat sowing to companion planting of two croppings a year, triple cropping in 2 years of flat sowing and companion planting. Although the planting area of wheat was reduced by over 100,000 mu, the unit yield and total yield all increased greatly. Since 1980, the county has firmly undertaken the production of corn according to the local conditions of sunshine, water, heat, soil and the planting experience of the masses. The sowing area reached 450,000 mu and the total yield reached 314 million jin, an increase of 40.81 percent over 1979. Paddy rice was mainly planted in the region west of Xiliucun and south of Pingancheng Commune in the water-rich belt and surrounding reservoirs; the area increased from 42,000 mu in 1979 to over 60,000 mu in 1980; the total yield reached 56.3 million jin, an increase of 80 percent over 1979, achieving the highest level in history. This year the area was expanded again, to 75,000 mu.

At present, Zunhua County is further readjusting the internal structure of agriculture in accordance with the agricultural zoning plans of the state agricultural commission and the province, and in the spirit of the general soil survey conference, it is drawing up county level comprehensive agricultural zoning to strive for greater development in agriculture, forestry, livestock production, fishery and diversification within a relatively short period.

9296
CSO: 4007/554

BUMPER WHEAT CROP REPORTED IN DINGXIAN DESPITE DROUGHT

Shijiazhuang HEBEI RIBAO in Chinese 25 Jul 81 p 1

[Article by Xuan Tieshuan [6513 6993 2165], Hui Junsheng [1920 0193 3932], and Chen Huiying [7115 1920 5391]: "Production Responsibility System Shows Its Power in Year of Severe Drought; Total Wheat Production in Dingxian Surpasses Highest Level in History"]

[Text] This year the Dingxian County committee of the Chinese Communist Party and the county revolutionary committee conscientiously implemented various forms of the joint production responsibility system in calculating compensation for wheat production, mobilizing the production enthusiasm of the broad masses of commune members; the 780,000 mu planted with wheat throughout the county produced a bumper harvest that broke the record in this year of drought. The average yield per mu was 340 jin, an increase of 130 jin over last year and an increase of 26 jin over the previous highest record realized in 1979. The total yield reached 270 million jin, an increase of 100 million jin over last year and an increase of 20 million jin over 1979. The entire county overfulfilled the summer food grain procurement task, the food grain ration of the commune members increased onefold over last year, the price of food grains in the farmers market has dropped steadily, and the economy is prospering.

Dingxian is a large county with 870,000 people and over 1.26 million mu of cultivated land. Each year the sowing area of wheat constitutes over 90 percent of the total area of cultivated land planted with food grains. To realize this year's bumper harvest of wheat, the county committee and the county revolutionary committee grasped the implementation of the joint production responsibility system in calculating compensation for wheat production as the central link to realize bumper harvests of wheat after the summer harvest last year, and summarized and popularized the experience in this system by the seven production teams of the Taerwa Brigade of Huazhangmeng Commune in this county. Over 4,800 production teams of the whole county were placed under unified planning, planting and irrigation, and over 2,200 teams implemented the responsibility system in calculating compensation for joint production and in contracting cadres in a big way; the remaining teams also implemented field management and the responsibility system in contracting work according to quotas, and the production enthusiasm of the broad masses of commune members was mobilized. The county committee and the county revolutionary committee paid special attention to grasping the work of the backward teams and of Dacunzheng; last year before wheat planting, over 200 cadres were transferred from the agencies directly subordinate to the county and were placed under the leadership of responsible comrades to go to Dacunzheng and the poor teams to work at the localities and to help implement the party's policy, to implement the various forms of the responsibility system; in only half a year's time these localities underwent great changes, and increased yields of wheat were promoted throughout the entire province.

9296
CSO: 4007/554

WHEAT HARVEST IN HANDAN PREFECTURE INCREASED DESPITE DROUGHT

Shijiazhuang HEBEI RIBAO in Chinese 22 Jul 81 p 1

[Article by Xing Ziwen [5887 1311 2429] and Li Tianzeng [2621 1131 1973]: "Policies Since the Third Plenum Show Strong Power; Handan Prefecture Wins Out Over Severe Drought, Total Yield of Wheat Increases 10 Percent"]

[Text] Handan Prefecture was won out over severe drought: the total yield of 5.12 million mu of wheat reached more than 1.2 billion jin, a 10-percent increase over last year, while the area of planting was reduced by over 300,000 mu. The yields in Daming, Feixiang, Linzhang, and Weixian all increased over 20 percent. The entire prefecture completed the summer food grain procurement task set by the province with a 13-percent surplus.

Since the party Third Plenum, the number of production teams that have implemented the joint production responsibility system in calculating compensation in this prefecture increased from 5 percent of the total number of production teams last year to 57.3 percent, thus mobilizing the enthusiasm of the farmers. The quality of sowing wheat, management, harvesting and threshing, and farm work was better than in past years. In many commune brigades, commune member families invested in fertilizers for the fields they were responsible for. Many commune members in Daming County voluntarily collected funds to build electric power facilities, sink wells, buy machinery, buy chemical fertilizers, and to make up for the problems of low productivity and collective poverty caused by "large-scale, formalism, egalitarianism." This year, wheat production shows an increase of nearly 40 percent over last year. Handan Prefecture has suffered from drought year after year; this year's spring drought was especially severe: the cumulative rainfall from the sowing of wheat to harvesting was only 34.1 millimeters. The cadres and commune members of the entire prefecture actively resisted drought, dug for potential underground water, and exerted efforts to expand the area of irrigation of wheat. Since the beginning of this year, the entire prefecture has drawn a cumulative amount of 1.2 billion cubic meters of water from underground, an increase of nearly onefold over the same period last year, and over 800,000 mu of wheat fields were irrigated. Linzhang County, which relied on canal irrigation in the past, undertook construction of mechanized wells and motor pump management in a big way; the gain of drainage and irrigation machinery was fully developed; over 400,000 mu of wheat was irrigated for wintering, returning green, jointing and filling in time; and the total yield of wheat surpassed that of last year by over 20 percent. Feixiang County sank 45 superior deep wells in the 6 communes in Gushui Prefecture in the eastern part of the county, where the area of cultivated land constitutes half that of the entire county, so that wheat that formerly "had to rely on the weather" was irrigated, an increased yield of 4 million jin in summer was realized, and the production of wheat of the entire county showed an increase of nearly 30 percent over last year.

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CSO: 4007/554

BRIEFS

MORE FAMILIES RAISING CHICKENS--Chicken raising by city residents and families of suburban commune members in Harbin, Jiamusi, Quiqihar and Hegang municipalities of Heilongjiang has virtually become a specialized and socialized operation. In 1980, the number of families raising chickens for commercial purpose reached 13,700; altogether they raised 910,000 chickens and turned over or sold to the state 11.68 million jin of fresh eggs, accounting for more than 70 percent of all the fresh eggs procured by the state locally. Currently the number of this type of families has grown to 19,100 and they are expected to raise 1.3 million chickens by the end of 1981. [Hong Kong ZHONGGUO XINWEN in Chinese 15 Jul 81 p 3]

CSO: 4007/564

BRIEFS

JIANGSU NEW PESTICIDE--The Nanjing pharmaceutical plant in Jiangsu has succeeded in developing a new pesticide, (er li ben mi qi zhi), a compound of dichlorobenzene which is harmless to both human and livestock. Trail use has proved this pesticide to be very effecient in killing mosquitoes, flies and cockroaches and in eliminating and controlling insect pests harmful to rice, cotton, wheat, vegetables, fruit trees, tea, tobacco and many other kinds of plants. [OW301331 Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 28 Aug 81]

CSO: 4007/572

BRIEFS

COTTON PRODUCTION--A good cotton crop is being gathered in from 100,000 mu of cotton fields in Duchang County, Jiangxi. As of 27 August, more than 10 million jin of unginned cotton had been gathered in. It is estimated that the county's total ginned cotton output will be 10 percent more this year than the last year. [OW071251 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 5 Sep 81]

JIANGXI COUNTY GRAIN--After delivering 13.73 million jin of public grain and 43.70 million jin of surplus grain, Yiyang County, Jiangxi Province, sold 7.57 million jin of above-quota grain to the state as of 21 August. Despite a decrease in acreage for early rice crops this year, the county increased total output of early rice by 6.4 percent compared with last year. [OW011603 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 26 Aug 81]

JIANGXI COUNTY RICE PRODUCTION--Xingguo County, Jiangxi, has reaped a good harvest of early rice this year with its total output reaching 22 million jin, 15.8-percent increase over that of last year. [OW011603 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 29 Aug 81]

JIANGXI PREFECTURE RICE PRODUCTION--Fuzhou prefecture, Jiangxi, has reaped a bumper harvest of early rice this year with its total output increasing by 6.3 percent over 1980 and by 17.68 million jin over 1979. [OW011603 Nanching Jiangxi Provincial Service in Mandarin 1100 GMT 29 Aug 81]

CSO: 4007/563

BRIEFS

FORESTRY CONFERENCE--The Nei Monggol Daxinganling forest work conference concluded on 1 September in Hohhot after an 11-day session. Attending the closing ceremony were Kong Fei, secretary of the regional CCP Committee, Kui Bi, Zhou Beifeng, Ba-tu-bagen and Wang Zaitian. Kong Fei made a report. He said: for a long time, Daxinganling has paid more attention to logging than to afforestation. This has led to a serious imbalance between logging and cultivation. Therefore, it is necessary to plant trees on all barren hills and land. We should also hasten the comprehensive use of forest resources and a diversified economy. Earnest efforts should be made to implement the forestry act, effectively protect the forests, strictly forbid illegal tree cutting and prevent forest fires. [SK022230 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 1 Sep 81]

CSO: 4007/572

BRIEFS

SUMMER HARVEST IN GUONGDONG--By 13 July, nearly 10 million mu of early rice were harvested in Guangdong. On Hainan Island, where summer harvest was already completed, the output of early rice this year was more than 100 million jin higher than in the same period of 1980. The province as a whole is expected to produce less early rice this year because of poor weather conditions and because its total early rice area was reduced to a little more than 28 million mu this year. [Hong Kong ZHONGGUO XINWEN in Chinese 15 Jul 81 p 1]

CSO: 4007/564

SHANDONG

BRIEFS

SHANDONG DROUGHT--The Weifang Prefecture, Shandong Province, CCP Committee and the prefectural administrative office jointly held a broadcasting rally on the morning of 8 September, mobilizing rural areas to combat drought, preserve soil moisture and begin sowing 7.5 million mu of winter wheat. Since the beginning of this year, the prefecture has been hit by a drought which is the worst and the longest in the past 50 years. The drought continues. It is seriously endangering late autumn crops and wheat sowing. [SK091025 Jinan Shandong Provincial Service in Mandarin 2330 GMT 8 Sep 81]

HIGHER COTTON OUTPUT EXPECTED--This year Shandong has planted 13 million mu of cotton, 1 million mu more than in 1956, the year in which the cotton area was the largest in the history of this major cotton producing area of China. As of today, over 80 percent of the cotton plants in this province is rated first or second grade, and this is 2 million mu more than in 1980, thanks to the timely rainfall last June. Shandong is expecting a better cotton harvest than in last year if there is no natural disaster between now and harvest. [Hong Kong ZHONGGUO XINWEN in Chinese 14 Jul 81 p 3]

CSO: 4007/566

BRIEFS

ZHEJIANG CITY EARLY RICE--Wenzhou City, Zhejiang, purchased 81.43 million jin of early rice by 23 August, overfulfilling purchase quota by 1.8 percent. The amount was 2.8 million jin higher than that purchased for the same period last year. [OW011603 Hangzhou Zhejiang Provincial Service in 1040 GMT 27 Aug 81]

ZHEJIANG COUNTY CATTLE--As of now, Jinhua County, Zhejiang Province, has raised more than 1,500 head of dairy cattle. [OW011603 Hangzhou Zhejiang Provincial Service in Mandarin 1040 GMT 26 Aug 81]

ZHEJIANG COUNTY AUTUMN CROPS--Commune members in Ruian County, Zhejiang, have been organized to strengthen field management of the county's more than 480,000 mu of autumn crops. Additional fertilizer has been applied to 343,000 mu of late rice and 105,000 mu of sweet potatoes. [OW011603 Hangzhou Zhejiang Provincial Service in Mandarin 1040 GMT 28 Aug 81]

CSO: 4007/563

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HK191344 Hong Kong HSIN WAN PAO in Chinese 19 Aug 81 p 5

[Zhongguo Xinwen She Dispatch: "The Qilong Points Out After Investigation That the Destruction of Forests on the Upper Reaches of Chiangjiang River was the Principal Cause of the Big Flood in Sichuan"]

[Text] Chengdu, 19 August--In a recent investigation of the disastrous flood in Chongqing municipality, Sichuan Provincial CCP Committee First Secretary Tan Qilong pointed out. Sichuan Province was hit by a catastrophic flood this year.

Looking into its cause this flood affected such an extensive area and wrought such heavy losses chiefly because the forests on the upper reaches of the Chiangjiang River were destroyed. As a result of serious soil erosion, torrents of water rushed down the mountains after a heavy downpour with a force that could not be stopped.

He said: "In order to prevent future floods, the most essential thing to do is to protect the forests and prevent the wanton felling of trees. In the mountainous areas, we must energetically carry out afforestation, revert cultivated fields back to forests in a planned and systematic way, gradually readjust the agricultural structure and maintain the ecological balance. With the bitter lesson that we have learned from this disaster, we must educate the people not to do any more foolish things like "bringing ruin to posterity while benefiting from our predecessors."

According to investigations by departments concerned, out of a total of 193 counties in Sichuan Province, only 12 have a forest cover exceeding 30 percent. Of the 53 counties in Central Sichuan, nearly half have forest covers of less than 3 percent.

Some have even less than 1 percent. With the destruction of forests, soil erosion becomes more and more serious and the silt content of various rivers increases year after year. Due to the destruction of vegetation, the water conservation capacity weakens and the river flow gradually reduces, thus making the place more vulnerable to drought and flood.

CSO: 4007/561

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TITLE: "Studies on Disease Resistance in Rice Breeding. II. A Preliminary Report on the Identification of Spectrum of Blast Resistance of Rice Varieties and Hybrid Lines"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 1-9

TEXT OF ENGLISH ABSTRACT: Spectra of blast resistance to 15 pathogenic strains of 13 physiological races representing 7 different groups (A, B, C, ..., G) were identified for 21 blast-resistant rice varieties and 22 hybrid lines in 1980. Among the ken varieties, Toride No 1 and No 2 (the main genotype of resistance is Pi-Z^t) and some of their hybrid lines had the broadest spectra of resistance, covering all the pathogenic strains tested, and had higher percentages of R-type reaction within their spectra. Pi 5 (with Pi-ta^2 gene) and some of its hybrid lines and two sien varieties, Tetep and Tadukan, also had broader spectra of resistance. Among the BL group of varieties (with Pi-b gene), BL 7 and BL 2 exhibited better blast resistance than did the others. Most of the above-mentioned

[Continuation of ZHONGGUO NONGYE KEXUE No 3, 1981 pp 1-9]

varieties were resistant to both blast and bacterial leaf blight.

Among the hybrid lines, Zhongxi 7602-5, 7604, 7702, 7709 and 7850 not only had broad spectra of blast resistance, but also had promising agronomic characteristics. It is suggested that they be introduced to commercial production or as parents in rice breeding programs.

Most varieties and hybrid lines are resistant to some pathogenic strains and susceptible to others, but their spectra of resistance are different. Therefore, it is of practical value that a newly released blast-resistant variety be provided with its spectrum of resistance, especially its resistance to local prevailing physiological races.

It was found that the correlation between the broadness of spectrum and the strength of blast resistance was highly significant, that is, the broader the spectrum the stronger the resistance and the higher the percentage of R-type reaction within the spectrum (R+M). Moreover, the unanimity of resistance to blast among rice varieties and hybrid lines was mainly in the case of an R-type reaction. Therefore, in the breeding program for blast resistance the unanimity of quantitative and qualitative effects of resistance should be emphasized. The breeder should pay more attention to R-type reactions in the breeding material.

[Continuation of ZHONGGUO NONGYE KEXUE No 3, 1981 pp 1-9]

Using two strains of bacterial leaf blight for inoculation it was found that strain L2-2 had a stronger virulence than did strain OS-118, and varieties Shizu, Tetep and Toride No 2 were superior in resistance to bacterial leaf blight. The correlation between virulence of the two strains was highly significant, while only negligible negative correlations between the spectrum of blast resistance and the virulence of either of the two bacterial strains have been observed.

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TITLE: "Studies on Inheritance of Blast Resistance in Rice Varieties"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 10-15

TEXT OF ENGLISH ABSTRACT: A set of resistant varieties to rice blast showed high resistance to fungus strains ZD_1 and PG_1. Another set of high yielding varieties was susceptible or moderately susceptible to the fungus strains mentioned above, except Jingyu 1 and Jingxi 17, both having resistance to fungus strain PG_1.

The F_2 population crossed by resistant varieties and high yielding ones showed different resistance to fungus strains ZD_1 and PG_1 according to their parent resistability. For ZD_1, F_2 populations of crosses with donors of Pi 1, Toride 1 and BL3 segregated into 15:1. This showed that there were two dominant genes for resistance in these donors. For PG_1, a ratio of 3:1 was obtained in the same material. This indicated that there is one dominant gene controlling resistance to PG_1. The F_2 population of crosses involving the donor Minehikari segregated into 3:1. This showed one dominant gene for ZD_1. The F_2 population crossed

[Continuation of ZHONGGUO NONGYE KEXUE No 3, 1981 pp 10-15]

between the resistant variety Nan 65 and middle-late Jingyue 1 segregated into 15:1 for two fungus strains. The F_2 population crossed between Nan 65 and middle-early varieties Jingfeng 2 and Jingxi 17 segregated into 63:1 for the same fungus strains. These results might be caused by the additive effect of multiple genes.

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TITLE: "Investigation of the Genetic Regulation of Earliness in Wheat Based Upon the Correlation of Characteristics and Heritability"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 16-24

TEXT OF ENGLISH ABSTRACT: This investigation was conducted in conjunction with the wheat breeding work during 1978-1980. Preliminary studies have been made on the genetic regulation of earliness.

1. According to data collected in three years, the average correlation coefficient between the F_1 and their parents was 0.7859** ($P < 0.01$), and that between F_2 and their parents was 0.8772** ($P < 0.01$). The regression coefficient was also highly significant. This shows that F_1 can be predicted from the maturity of the mean value for the heading date of the parents. In addition, the corresponding range of maturity of F_2 can also be directly predicted from the parents.

2. The mean value of heritability ($h_b\%$) in a broad sense, according to the calculated data from 20 different crosses of F_2 and 8 crosses of F_3 in 3 years, was 62.37 and 60.87 percent respectively, both showing relatively high values. The heritability between F_2 and F_3 was moderately stable. It is advisable to begin the

[Continuation of ZHONGGUO NONGYE KEXUE No 3, 1981 pp 16-24]

selection of early generations according to the characteristics of the heading stage.

3. Two factors affecting the estimation of the value for the heritability of the heading date in wheat are: a) the genetic stability of the parents; b) the difference of the parental ecotypes and the heading dates.

4. When crosses were made among the parental materials with different growing periods, a mean value of the heading date earlier than that of the parents and a negative superiority were generally found in F_1, while in F_2 the heading date showed a continuous variation controlled by polygenes and a tendency toward early parents and transgressive segregation. Hence most early varieties may be selected from the early parents as well as from late parents. With the intensification of the selection pressure, the early-maturing materials with both high yield and desired characteristics can be obtained.

5. By crossing the local early-maturing cultivars with the foreign ones which are insensitive to day-length and temperature in order to accumulate the early-maturing genes, we have found a method of breeding and selection of the extremely early-maturing wheat cultivars.

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TITLE: "Preliminary Studies of the Relationship between Bleeding Sap and Aerial Organs of Winter Wheat"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 33-38

TEXT OF ENGLISH ABSTRACT: The ear size has a closely positive correlation to the sugar content of bleeding sap in winter wheat, but has little correlation to the amino acid content of bleeding sap. Thus the sugar content in the bleeding sap may be used as an index for measuring the developmental status of ears. Under single planting conditions, as the ear number per single plant increased, the number of secondary roots per culm and the content of amino acids in the bleeding sap decreased while the sugar content increased. Under the conditions of population cultivation, as the ear number per single plant increased the number of secondary roots of every culm decreased, and the amounts of bleeding sap did not change significantly while the sugar content in the bleeding sap increased.

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TITLE: "Ecological Classification of the Chinese Soybean Cultivars"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 39-46

TEXT OF ENGLISH ABSTRACT: In the present study the main ecological characteristics (growth period, days from seedling emergence to flowering, pod setting period) which influence the regional adaptation were used as the basis for the ecological classification of the Chinese soybean cultivars.

The representative cultivars of all types of different seeding seasons were classified into 12 maturity types and 44 ecological groups, and 80 of the representative cultivars were labeled with latitude of regions of origination as well as their types of seeding season. According to this classification, maturity groups and characteristics of photoperiodic response of the soybean cultivars of different regions from northern to southern China and the differences among cultivars can generally be understood. Such classification is also valuable for understanding the rule of ecological distribution of the ecological groups and as guidance for varietal introduction, arrangement of cultivation region and ecological breeding of soybeans.

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TITLE: "Enhancement of Cotton Maturity by Ethrel Spray"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 47-53

TEXT OF ENGLISH ABSTRACT: Delay in boll maturity is often a serious problem affecting the cotton production in China. In 1974-1980, we used ethrel spray on cotton for enhancement of maturity in the laboratory as well as in the field. Ethrel-treated plants possess higher levels of ethylene than do the controls, which in turn induces rapid boll formation with a higher intake of photosynthates. The bolls of the treated plants also dehisce earlier and their peroxidase activity is higher, particularly in the wall.

By spraying with ethrel solution of 500-1000 ppm when most of the bolls have reached 70-80 percent maturity, cotton plants not only mature earlier, but also give higher yield and better fiber quality.

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TITLE: "Studies on the Microsporocarp and Leaf Cavity of *Azolla imbricata* Nakai by Electron Microscopy"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 54-56

TEXT OF ENGLISH ABSTRACT: The fine structure of microsporocarp and leaf cavity in *Azolla* was investigated with the aid of scanning and transmission electron microscopes. The microsporangia, massulae and spores inside the microsporocarp were photographed for surface features and size measurement. In addition, the surface structure of the dorsal lobe and the stomatal characteristics were investigated. The mode of distribution of the blue-green algae and the multicellular hairs in the leaf cavity were scanned. The morphology of the young algae on the stem tip was compared with that of the mature algae inside the leaf cavity.

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TITLE: "The Agroclimatic Resources and Heat Condition for Cropping System in China"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 57-65

TEXT OF ENGLISH ABSTRACT: The time and space distributions and their rules of light, heat and water resources in China and the agroclimatic conditions required for staple crops are analyzed in detail, and accumulated temperature indexes of the different varieties of staple crops are obtained. Because the heat condition is a major climatic factor in the development and yield of the crops and the numbers of the multiple crop index in a region also depend on the degree of heat, we consider $\geq 0^{\circ}C$ accumulated temperature as the principle index, the disaster weather as a supplementary index, and the numbers of continuous cropping as the multiple crop index. According to the indexes mentioned above, China can be

[Continuation of ZHONGGUO NONGYE KEXUE No 3, 1981 pp 57-65]

divided into 3 regions (1 crop a year, 2 crops a year and 3 crops a year) and 13 subregions. The favorable and unfavorable conditions in every region are described. There have been many disputes regarding the problems of double cropping of rice and an additional cropping of wheat in southern Jiangsu and double cropping of rice in Sichuan, and for this reason we present some views on this question.

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TITLE: "The Improvement of Cultivation System for Increasing Photosynthetic Efficiency in Sugarcane Region"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 66-69

TEXT OF ENGLISH ABSTRACT: This paper discusses how to increase the photosynthetic efficiency of sugarcane and other rotating, interplanting or undersowing crops with sugarcane. We have undertaken research on three aspects of this problem in the main sugarcane growing region of Xianyou County, Fujian Province.
1. Turning the directly-sown cane seed piece into a nursed shoot for transplanting, a method used since 1973. The yield of the millable cane stalk is increased 10-30 percent, meaning that the photosynthetic efficiency is increased 0.0990 - 0.3795 percent over the direct sown, excluding the wheat production efficiency.
2. The test of shifting from single wheat to interplanting wheat with vegetables at a 1 meter width interval, as begun in 1974. Due to the harvesting date of vegetables being more than one month earlier than that of wheat, the planting of

[Continuation of ZHONGGUO NONGYE KEXUE No 3, 1981 pp 66-69]

sugarcane and its interplant crop soybeans may also be done early. As a result, the yield of sugarcane increased 14-29 percent over the direct sown cane seed piece under the wheat plant. Even though the planting area of wheat has decreased 50 percent, its production has decreased only 25 percent and this loss can be supplemented by the production of soybeans. In addition, about 15,000 kg of vegetables per hectare will be obtained, i.e., the photosynthetic efficiency is increased 0.3780-0.5027 percent.

3. Changing from a fallow field following the harvest of sugarcane to that planted with a winter crop. Formerly, after harvesting ratoon cane the field usually lay fallow until April of the next year when rice seedlings were transplanted. Through experimentation we have planted such winter crops as wheat, barley and green manure on this field, beginning in 1975, and have been successful. The yield of wheat is 2625 kg and the fresh weight of green manure per hectare is 30,000 kg; i.e., the photosynthetic efficiency of this field increased over 0.145 percent.

Now these measures have become an integrated system and are to be popularized widely in the main sugarcane region of Xianyou County, Fujian Province.

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TITLE: "A Discussion on Microclimatic Resources for Development of Citrus Production"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, 1981 pp 70-73

TEXT OF ENGLISH ABSTRACT: Due to the differences of the relief in Hunan Province, there exist some microclimate regions allowing citrus trees to overwinter easily. It is usually shown that citrus trees in these regions can pass through the winter safely, but those grown outside these regions are severely attacked by cold and freezing temperatures. According to microclimatic principles, a model of the warm microclimate regions has been developed. A new pattern of citrus production will come into being with the advantages of microclimate regions are fully used.

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CSO: 4009

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TITLE: "Preliminary Observation of the Growth and Development Principle of Summer Millet"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, Jun 81 pp 2-3

ABSTRACT: For the purpose of investigating the principle of growth and development of summer millet in order to increase its yield still further, a 3-year experiment was carried out at the Shanxi University of Agriculture Experimental Farm in 1978-80. The test breed was Fujincao, the soil fertility was medium, the powdery sandy loam contained 1 percent organic matter, the topsoil was thick, the harvest of the previous wheat crop was 25 Jun at a yield of 548 jin/mu. The summer millet was planted on 1 Jul and was ripe at the beginning of Oct. Observations of the growth of the root system of the summer millet during the various stages of the development period, the principle of material transfer during the various stages, the growth condition of the above ground portion during the various stages, etc. are reported. The paper concludes that soil banking should be early and hoeing should be light in order not to weaken the function of the roots. As 90 percent of the dry material of the spikes is the photosynthesis product of leaves after heading, late stage management is essential to prevent lodging and early withering and to extend the period of effective function of the green leaves.

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TITLE: "Parental Characteristics of Gaoliang, Genealogical Origin, and Breeding Characteristic Mating Principle"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, Jun 81 pp 4-7

ABSTRACT: In the past 2 decades, while breeding new 3 lines of gaoliang using sexual hybridization technique, a project of studying the characters of parents, the genealogical origin, and breeding characteristics as simultaneous principle for mating was carried out. Consequently, the 3 new lines of Xinliang No 7, Xinliang No 52, Xinliang No 80, the restorer line of Xinliang No 202 and the sterile line of 02A were bred out. All these lines are now extensively extended all over the country, while their hybrids, Jinza No 6, Jinza No 7, Jinza No 9, and Yuanza No 10 are now being extended nationally over 9,000,000 mu. Based upon the data gathered to date, this paper analyzes the relationship between the characteristics of the parents and the heterosis of the F_1, the relationship between the genealogical origin of the gaoliang and the heterosis of the F_1, the relationship of the breeding characteristic of parents and the breeding characteristic of the hybrid offspring, and the technique of group-mating on the basis of parental characteristics, genealogical origin, and breeding characteristics.

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TITLE: "Research on Hereditary Parameters of Major Characteristics of F_2 of Interbreed Hybridization of Ultra-early Ripening Breeds of Upland Cotton"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, Jun 81 pp 8-12

ABSTRACT: Ultra-early ripening breeds of upland cotton are used as the experimental materials to study the inheritability, variation coefficient, genetic progress, coefficient of interrelationship, and such selection indices as the major yield characteristics for the purpose of improving the breeding method, raising the selection efficiency, and accelerating the breeding process. Ultra-early breeds of Chaoyang No 1, 6901, Heishanmian, 7364, 711-1 are used as parents. In order to achieve genetic purity, the parents are continuously inbred for 3 generations. In 1977, several mating groups are chosen for hybridization to produce F_1 in 1978. The same grouping system is continued for further hybridization. In 1979, the P_1, P_2, F_1, F_2 are planted simultaneously and sequentially. During the period of growth and development, 20 plants are randomly taken from each of the materials for inspection. Field inspections and laboratory examinations of these produce 13 characteristic expressions. Inheritability, environmental variables, variation coefficient, genetic progression, and gene type interrelation coefficient are calculated for these expressions to produce a formula for determining the selection indices.

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TITLE: "Yield Increase Result of Pulverized Coal Ash Reconstituted Soil and Research on Its Pollution Effects"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, Jun 81 pp 13-15

ABSTRACT: Pulverized coal ash is the waste residue of thermal power plants using coal as the fuel. According to incomplete statistics, more than 1,000,000 tons of it are discharged every year in Shanxi Province. A large piece of land is used to store it and the dust is harmful to the people and industries. The authors began to study ways of treating and utilizing it. There are 2 types of clay and sandy soils in the 5 brigades south of Taiyuan. Small plots of 0.05 mu each of these brigades were picked for experimentation. In the sandy soil, 2,500, 5,000, 10,000 and 20,000 jin/mu; in the clay soil 10,000,20,000,30,000, and 40,000 jin/mu of the ash were added and wheat, corn, rice, cotton, etc. were planted. For each type of soil, 5 controls were also arranged. Soil specimens were periodically taken for analysis and the crops were observed during all stages of growth and development. The increase of benzo (a) pyrene and cadmium contents in the crops is 0.01-0.2 ppb, still considerably less than the 1.0 ppb contamination limit of some countries, while the increases of yield of the various crops varies from 10.1 to 30 percent.

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TITLE: "Experiment on Decomposition of Upland Green Manure and Water Consumption"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 6, Jun 81 pp 16-17

ABSTRACT: At present, the technique of turning over green manure is rarely adopted for upland fields because sometimes it has been found to consume excessive water. As the rainfall distribution is not even, the effect of the green manure cannot be stable. The rainfall of the upland winter wheat region of the province is often more than 400mm/year while the yield is only about 100 jin. Normally to produce 100 jin of wheat requires about 120mm of rainfall; therefore, it is necessary to study the water needs of green manure to decompose in order to select the variety requiring less water. Water consumption, decomposition speed, and nitrogen accumulation of Phaseolus mungo, Seshania carmabina, black beans, sesame, and Crotalaria juncea were studied. For the nitrogen accumulation per unit of water consumption, black bean is a more ideal green manure for dry land. The yield increase of crops is most obvious with Seshania carmabina as the green manure, but it consumes a great deal of water and, therefore, is not suitable.

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TITLE: "A Preliminary Study on Aphid Parasites in the Cotton Field (Hymenoptera: Aphidiidae)"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese No 4, 1981 pp 158-160

ABSTRACT: In cotton fields of Jiangsu Province, aphids are mainly Aphis gossypii Glover, with several additional minor species in grain and cotton intercropped fields. From these aphids, 4 types of parasitic wasps were discovered: Lysiphlebia japonica (Ashmead), Trioxys indicus Subba Rao et Sharma, Aphidius avenae Haliday, and Lipolexis gracilis Forster, with a rate of parasitism of 10-15 percent in the early and as high as 60-70 percent in the late stage of the growth development period of the cotton. These parasites are observed to be one of the important natural enemies, but 2 problems remain with respect to their application for the control of cotton aphids: (1) The growth of parasites is obviously slower than the aphids; (2) Secondary parasites form the important factor controlling the multiplication of aphid parasites. The problem of secondary parasites should be emphasized in future studies.

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TITLE: "Attraction and Elusion of Branch Bundles of Walnut and Flatspine Pricklyash to Heliothis armigera (Hubner)"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese No 4, 1981 pp 162-163

ABSTRACT: In 1978, during the occurrence of the fourth generation of cotton boll worms (Heliothis armigera (Hubner), branch bundles of walnut, poplar, pricklyash, white pepper, etc. were compared for the effectiveness in either attracting or driving away cotton boll worm moths. Results demonstrate that walnut branch bundles attract the largest number of moths, while those of pricklyash attract none at all. Even after thorns were removed from the pricklyash branches, not a single moth was found on these bundles. Experimental data are included in the paper.

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TITLE: "Application of Optimum Control Theory in Pest Management"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese No 4, 1981 pp 180-182

ABSTRACT: Most recently, in foreign countries, pest management has begun to be distinguished from pest control. The objective of pest control is to reduce the number of pests, the fewer the better. With pest management, the goal is to control the density of pests and stabilize it to within a certain economic threshold. In pest management, pests and agricultural crops form an ecological system. The pests, their natural enemies, and the crops interact with meteorological, soil, and other environmental conditions. These interrelationships and principles of change must be understood and the density of pests in the fields must be constantly determined so that insecticides and natural enemies may be properly used to bring about the goal of pest management. In 1973, Shoemaker utilized the optimum control theory to carry out a study of the management system of 2 types of corn pests and arrived at the optimal strategy of using breeds of corn borer resistance but applying agricultural drugs to control root worms. The technique of Shoemaker of using a management model to determine the optimal method of management in a given environment is explained.

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TITLE: "Comments on the Problem of Air Hole in Subterranean Termites (Termitidae: Macrotermitinae)"

SOURCE: Beijing KUNCHONG ZHISHI [ENTOMOLOGICAL KNOWLEDGE] in Chinese No 4, 1981 pp 191-192

ABSTRACT: Since 1974, a great deal has been said about air hole of subterranean termite nests, but descriptions of these air holes and opinions concerning them are very different. This paper proposes the following questions: (1) What is the relationship of the location of the air hole and the major nest, the tunnel, etc.? (2) How is the air hole distinguished from the channel through which termites fetch food? (3) How to distinguish air hole from tunnels of other insects? (4) Whether air hole does exist above the main nest, and when can it be discovered? (5) Is the expansion of the air hole permanent or temporary? Varied opinions concerning these and other aspects of the air hole are briefly discussed.

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TITLE: "A Comparative Study on the Effect of LRH-A on the Serum Gonadotropin Levels of Female Carps in Spawning Season"

SOURCE: Shanghai SHUICHAN XUEBAO [JOURNAL OF FISHERIES OF CHINA] in Chinese No 2, 1981 pp 103-109

TEXT OF ENGLISH ABSTRACT: Based on species discrepancies of responsiveness to LRH-A, serum gonadotropin (sGTH) levels of the mature female carps and immature female silver carps were compared after cardiac injections of LRH-A at two different times in one day. Fish sera were sampled at intervals either within 1 hour or during a 24-hour period. The sGTH concentration was measured by radioimmunoassay. In all cases dealing with the mature fish held under 18-20°C, two distinct peaks were observed, one within 5 minutes and the other 5-6 hours later. The second peak was not detectable in the immature fish. This may signify that the second surge of GTH was more important than the first in inducing spawning. When

[Continuation of SHUICHAN XUEBAO No 2, 1981 pp 103-109]

the carp was subjected to lower temperatures (11-13.5°C), the occurrence of the peaks was much delayed, which is in accordance with the fact that when the water temperature drops below the optimum, the response to the analogue is prolonged or even suppressed as has been found in farm practice.

When silver carps received LRH-A 23 days after the first ovulation, induced by the same hormone analogue, the sGTH pattern was similar, but higher in magnitude. Anatomical examination showed that the ovaries had significantly proceeded to the fourth stage of maturation, though the GSI values were lower than those prior to the first ovulation. The long-term effect of LRH-A in terms of acceleration of ovarian recrudescence in the postspawning phase of the reproductive cycle was apparent.

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TITLE: "Histological Observations of the Maturity of the Female Gonad of the Small Croaker, *Pseudosciaena polyactis* Bleeker"*

SOURCE: Shanghai SHUICHAN XUEBAO [JOURNAL OF FISHERIES OF CHINA] in Chinese No 2, 1981 pp 161-169

TEXT OF ENGLISH ABSTRACT: The present paper deals with observations of the cycle of histological charges in the ovaries of the small yellow croaker, *Pseudosciaena polyactis* Bleeker. Samples were collected monthly from Bohai and the northern part of Huanghai in May, 1963, to June, 1964.
1) Maturity. Based on the macro- and microscopic characteristics, the maturation of the ovaries can be divided into six stages: Stage I--Juveniles; Stage II--includes immature ovaries and recovered spent ovaries; Stage III--ripening ovaries; Stage IV--nearly ripe ovaries; Stage V--ripe ovaries near spawning or spawning; Stage VI--spent ovaries, and Stage VI-IV', V'--recovered ovaries.
2) Annual cycle of the ovaries. The ovaries enter into Stage VI-II' in July-August; Stage II' in September-October; Stage III in November-January (mostly in December-January) (this is the overwinter period); Stage IV in March-May (often in April); Stage V from mid-May to mid-June (mostly in May) (This is the spawning period). After the fish releases one batch of ova, the ovary is in Stage VI-IV' (or IV'), and later on develops to Stage V'. Stage VI occurs in June.

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3) Reproductive cycle. Sections of ovaries of each successive group (2^{+}-15^{+}) collected during the spawning season showed empty follicles. This indicates that the reproductive cycle of the small yellow croaker is of the plural cyclic type, with the adult fish spawning every year.
4) Type of spawning. The ripe eggs of this fish are released in at least two batches in a breeding season. It is evident that sections of ovaries sampled from fish before and after spawning all show oocytes of various sizes.

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TITLE: "A Preliminary Study on Hypnean"

SOURCE: Shanghai SHUICHAN XUEBAO [JOURNAL OF FISHERIES OF CHINA] in Chinese No 2, 1981 pp 179-185

TEXT OF ENGLISH ABSTRACT: 1. For the preparation of hypnean from *Hypnea* sp. prior to extraction the algae should be treated with Baume' 20° NaOH at room temperature for 2 days, and rinsed with water. The treated seaweed is then extracted with 15-20 times its quantity of 0.04 percent dilute H_2SO_4 solution at 100°C for 1-1.5 hours. After filtration, KCl was added to the filtrate to bring its concentration to 0.2 - 0.3 percent, and the solution was allowed to gelatinate. The gelatin was frozen, thawed and dried.
2. The gelatinous strength of hynean was markedly affected by electrolytes. The

[Continuation of SHUICHAN XUEBAO No 2, 1981 pp 179-185]

order of effect by cations is: $Ca^{++} > K^+, Cs^+, Rb^+ > Na^+, Li^+, NH_4^+$; and by anions is: $Cl^- > NO_3^-, SO_4^= > I^- > CO_3^=$.
3. The setting point of hynean was affected by KCl, increasing with the increased concentration of KCl.
4. The culturing effects of bacteria (*Salmonella typhasa*, *Pasteurella pestis*, *Shigella dysenteriae* and *Brusella abortus*) in hynean media and in agar media were compared. Hynean gave better results.

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TITLE: "On the Screening of Resistant Rice Cultivars (*Pyricularia oryzae*) in Guangxi"

SOURCE: Tianjin ZHIWU BINGLI XUEBAO [ACTA PHYTOPATHOLOGICA SINICA] in Chinese No 2, Jun 81 pp 1-5

TEXT OF ENGLISH ABSTRACT: During 1973 to 1979, 11,198 rice cultivars were tested in Guangxi rice blast nurseries for their resistance. Some resistant cultivars were further tested by artificial inoculations. As a result, 23 of them showed highly to moderately stable resistant reactions. Hong-jiao-zhan, Chai-tang and Jin-wei-ai were cultivars with a broad spectrum of resistance to blast. Preliminary observations revealed that reactions to leaf and neck blast were correlated.

In this paper, the problem of the type of disease resistance to rice blast is discussed. The so-called horizontal resistance described by van der Plank (1968) was not demonstrated in the present study.

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TITLE: "Factors Affecting Infection of Some Winter Wheat Cultivars to Scab Disease Caused by *Fusarium graminearum* Schw."

SOURCE: Tianjin ZHIWU BINGLI XUEBAO [ACTA PHYTOPATHOLOGICA SINICA] in Chinese No 2, Jun 81 pp 7-12

TEXT OF ENGLISH ABSTRACT: Greenhouse inoculation experiments made by inoculating separate florets at the end of the blooming period to florets with (1) anthers exposed to the outside of the glume, (2) anthers remaining inside the glumes and (3) with anthers removed, with inoculation made by introducing a drop of spore suspension to the upper part of the ovary. Incidence of the infection from these three groups of tests were in the ratio of 15:58:31 respectively for (1):(2):(3), for a susceptible cultivar Zhe-mai No 1; and 4:18:13 respectively for the resistant cultivar Su-mai No 3. It was noted that the test of inoculating exposed anthers gave the lowest infection rate whereas that of inoculating anthers remaining within the glumes gave the highest rate of infection, particularly in the case of the susceptible cultivar. It may be considered that the low proportion of residual

[Continuation of ZHIWU BINGLI XUEBAO No 2, Jun 81 pp 7-12]

anthers of the entire spike is an indication of a low primary infection. The resistant cultivar, Su-mai No 3, however, revealed a delay in expression of symptoms and a diminution of the infection area.

Inoculation tests performed indoors and in the field at varying stages of maturity of the common winter wheat plant have demonstrated that a resistant cultivar has a shorter period of susceptibility to infection, has a marked increase in resistance to infection at the milky stage and a delay in the period of full disease development in the case of field plants inoculated at the blooming stage.

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TITLE: "Effects of Wheat Rosette Disease Virus on *Laodelphax striatella* Fallen"

SOURCE: Tianjin ZHIWU BINGLI XUEBAO [ACTA PHYTOPATHOLOGICA SINICA] in Chinese No 2, Jun 81 pp 13-18

TEXT OF ENGLISH ABSTRACT: It has been shown that wheat rosette disease virus (northern cereal mosaic virus) is harmful to the vector *Laodelphax striatella* Fallen. The nymphal stage of the vector was prolonged for 5.3 days. The death rate before emergence of the viruliferous adult increased by more than one time over that of the non-viruliferous adult. 3.3 percent of the viruliferous individuals cannot emerge normally. The pre-oviposit stage of the female adult was prolonged 1.4 - 3.5 days. The oviposit stage and longevity were shortened by 8.2 - 11 days and 6.5 - 15.4 days respectively. The average amount of the oviposition decreased by 1.9 eggs a day. The total amount of oviposition per female adult fell to 95.4 - 107.7 eggs. But the virus does not influence the filial generation.

The ability of the viruliferous vector to resist low temperatures obviously declined. When these insect vectors were treated at 0°C to -4°C for a long time and

[Continuation of ZHIWU BINGLI XUEBAO No 2, Jun 81 pp 13-18]

at -16°C to -19°C, and -21°C to -24°C for three hours, the death rate of the viruliferous vectors was 25-35 percent higher than that of the non-viruliferous vectors. The viruliferous vector is sensitive to moisture. Under RH at 50 percent for 24 hours, its death rate was 10 percent higher than that of the non-viruliferous vectors. When they were starved for five days, the death rate of the viruliferous nymphs was 20 percent higher than that of the non-viruliferous nymphs in spring and 25 percent higher in summer. The ability of the male to resist starvation is weaker than that of the female.

9717
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Plant Protection

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TITLE: "A General Survey on Seasonal Migrations of *Nilaparvata lugens* (Stål) and *Sogatella furcifera* (Horvath) (Homoptera: Delphacidae) by means of Airplane Collections"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 81 pp 73-82

EXCERPTS FROM ENGLISH ABSTRACT: The brown planthopper (BPH), *Nilaparvata lugens* (Stål), and the white-backed planthopper (WPH), *Sogatella furcifera* (Horvath), are serious insect pests infesting China's rice crop. During 1977-1979, airplane collections of both BPH and WPH from central China (Hubei, Hunan, Jiangxi and Anhui) were made in the summer and fall by using a specially designed trap attached to the bottom of an airplane. For the purpose of regular collections, we flew a total of about 13,000 km. Nine species of planthoppers were collected. The total number of planthoppers collected was 2102, including 946 BPH, 969 WPH and 187 other planthoppers.

These migratory planthoppers usually flew in swarms. The heights of migrations of these planthoppers were from 1500 to 2000 m in the summer and 500 to 1000 m in the fall. It has been estimated that in the summer the highest aerial density of the

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 81 pp 73-82]

BPH was 4.80/1000 m^3, and that of the WPH was 4.27/1000 m^3. In the fall the highest aerial density of the BPH was 3.89/1000 m^3 and that of the WPH was 1.40/1000 m^3. In Hubei, earlier infestations caused by these planthoppers in rice fields usually coincided with higher aerial densities of these migratory planthoppers. Present studies have also proved that mass migrations of these planthoppers depended largely on winds. Their northward migration was mainly enforced by the southwestern wind in the summer, and their southward migration, or back home migration, was enforced by the northeastern wind in the fall. There is evidence to show that summer migrations of these planthoppers may start in south China, with spreading continuing until they reach north China.

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TITLE: "Preliminary Studies on Screening of Varietal Resistance to the Rice Gall Midge (Orseolia oryzae Wood-Mason)"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 81 pp 91-94

TEXT OF ENGLISH ABSTRACT: The varieties from the "International Rice Gall Midge Nursery" and local varieties were screened for the resistance to the gall midge in 1978-1979. The mass screening procedure included the seedbox, seed bed and field tests. Initial varietal screening was conducted in the seedling stage, and those varieties showing low infestation were retested in the field to confirm their resistance. Each test was performed in the cage. The gravid females were released to the plant at the rate of one insect per 20-25 seedlings, when the seedlings had grown about 7-10 days after sowing (2-3 leaves), or about 10 days after transplanting.

No gall appeared in varieties of W_{1263}, R_{7-2757}, R_{7-2758}, R_{7-2760}, $R_{35-2750}$, $R_{35-2751}$, $R_{35-2752}$, $R_{35-2753}$, $R_{35-2755}$, $BKNBR_{1030-76-2}$, $BKNBR_{1030-3-3-6}$, RD_9,

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 81 pp 91-94]

ARC_{6650}. Highly resistant varieties (1-5 percent of plants with galls) include IET_{6013}, IET_{6014}, $R_{35-7739}$, BG_{404-1}, $BKN_{6806-46-60}$, $BKN_{6809-74-17-1}$, $BKNBR_{1030-11-2}$, $BKNBR_{1030-51-1}$, $BKNBR_{1094-28-1}$, $BKNBR_{1030-7-5-4}$, $BKNBR_{1030-78-2}$.

Among local varieties, no gall appeared in Gi-Chai-Zhen, and 16 varieties, including Da-Vor-Zhan and Wuan-Jin-Feng 6, are highly resistant (1-15 percent plants with galls). However, as plant anatomy indicated, the growing point of these varieties was already damaged by the gall midge. The varieties showing resistance may be used as resistant parents.

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TITLE: "A Preliminary Study of the Spider Population in the Paddy Field Ecosystem"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 81 pp 101-110

TEXT OF ENGLISH ABSTRACT: 1. The species of spiders in the paddy fields in the northern and middle mountainous and plain areas of Guangxi have been investigated systematically from 1977-1978. Twenty-eight species of the spiders were found. The dominant species among them are Theridion octomaculatum (Theridiidae), Engonidium graminicolum and Oedothorax insecticeps (Micryphantidae), Lycosa pseudoannulata and Pirata subpiraticus (Lycosidae) and Tetragnatha japonica (Tetragnathidae).
2. The results of systematic investigation from the early to late periods of the rice field ecosystem show that the main spider populations are Engonidium graminicolum and Oedothorax insecticeps in the early and middle stage of early rice, but in the late stage is Theridion octomaculatum. There are Micryphantidae and Theridion octomaculatum populations in equivalent quantities in the early stage of late rice, but the former is greatly surpassed by the latter at the end of the late rice. Under the condition of nonapplication of insecticides in the full growing stage of

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 81 pp 101-110]

the rice plant, the maximum number of the mixed population of spiders can reach 40~50 million per mu, with an average of 30~40 million by the end of the early rice. At the end of the late rice it can amount to 20 million, with an average of 15~18 million.
3. The main things that influence the spider's population are the usage of a great deal of chemical insecticides over a long period and the seasonal agricultural practices.
4. The spiders in the paddy field might regulate the density of leafhoppers and planthoppers. In the integrated control of rice insect pests the spiders in the paddy field should be protected and utilized against insect pests.

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TITLE: "Studies on Rice Dwarf Virus Disease. II. Infection, Disease Development and Control"

SOURCE: Tianjin ZHIWU BAOHU XUEBAO [ACTA PHYTOPHYLACTICA SINICA] in Chinese No 2, Jun 81 pp 127-135

TEXT OF ENGLISH ABSTRACT: The incubation period of the rice dwarf virus in plants ranges from 10-15 days varying with temperatures, rice growth stages and the instars and sex of the insect vector Nephottetix cincticeps. The most susceptible stages of rice are from the first tillering to full tillering stage. Infection at these stages results in no panicle or grain, while at the end of the tillering stage it results in yield losses of about 80 percent of the rice. The virus overwinters in the insect vector. It is transmitted to the first crop of rice by the viruliferous adult insects of the overwintering generation, and to the second rice crop by the viruliferous insects of the second and third generations. The transovarial virus in the first and fourth generations of congenital viruliferous insects can

[Continuation of ZHIWU BAOHU XUEBAO No 2, Jun 81 pp 127-135]

cause a second infection in early and late rice respectively. The disease is usually much more severe on the earlier transplanted late rice, especially on the late hybrid rice. The infection occurs mainly at the initial period after transplanting.

The disease can be effectively controlled by adopting the integrated control measures on the basis of cultural practices and timely elimination of the vectors. In the disease-prone areas, the effective control of the disease can be attained by the application of insecticide one to three times at the initial period of the earlier transplanted late rice for elimination of the insect vectors based on crops with the same growth duration being planted in adjacent fields.

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